

REMARKS

The Examiner is thanked for the thorough examination of the present application. The Office Action, however, tentatively rejected all claims 1-29. For reasons set forth herein, Applicants traverse these rejections and respectfully request reconsideration and withdrawal thereof.

The drawings were objected to under 37 CFR 1.83(a). In this regard, the Office Action indicated that the drawings must show every feature of the invention specified in the claims. Therefore, Applicants have amended the drawings (FIG. 5b) to include the fan 155 of claims 12 and 27.

The Office Action rejected claims 1-11, 13-26, and 28-29 under 35 U.S.C. 103(a) as allegedly unpatentable over Nakamori (US 5,995,370) in view of Frank (US 4,991,002). Applicants respectfully traverse the rejection made by the Office Action for the reasons discussed below.

Among other features, claims 1 and 15 recite a function module comprising a first circuit board, a second circuit board, and a plate-type heat dissipation device. The first circuit board includes a first surface with a first ground layer (first conduction layer), and the second circuit board includes a second surface with a second ground layer (second conduction layer), wherein the second surface faces the first surface. The plate-type heat dissipation device is disposed between the first circuit board and the second circuit board, abutting the first ground layer (first conduction layer) and the second ground layer (second conduction layer), respectively.

In contrast, Nakamori discloses a heat-sinking arrangement including insulating layers 7

and 13, and conductor layers 9 and 3. The conductor layers 9 and 3 are disposed on the opposite sides of the insulating layers 7 and 13, respectively. Significantly, even if a heat dissipation device is disposed between the insulating layers 7, 13, the insulating layers 7, 13 cannot abut the heat dissipation device. Accordingly, Nakamori fails to teach a heat dissipation device, **abutting the first ground layer and the second ground layer, respectively.**

Also in contrast to the claimed invention, Frank discloses a modular power device assembly comprising a heat conductive plate 92, pre-packaged devices 100, 100', die mount flags 12(heat removal plate), and surfaces 13, 13'. As stated in column 6, line 34-38, pre-packaged devices 100, 100' are of a type wherein plastic encapsulation 102, 102' is molded so as to completely enclose die mount flag 12, 12' (heat removal plate) so that face 13, 13' thereof is not exposed, but contained within the encapsulation 102, 102'. That is, the die mount flag 12, 12' does not abut the heat conductive plate 92.

Accordingly, Frank fails to teach that the heat dissipation device **abuts the first ground layer and the second ground layer, respectively.**

As both Nakamori and Frank fail to teach that the heat dissipation device abuts the **first ground layer and the second ground layer, respectively**, claims 1 and 15 patently define over the cited art.

As stated above, Applicant respectfully submits that claims 1 and 15 are patentable Nakamori in view of Frank. Since Claims 1 and 15 have overcome the rejection, dependent claims 2-14 and 16-29 patently define over the cited art for at least the same reasons.

The Office Action rejected claims 12 and 27 under 35 U.S.C. 103(a) as allegedly unpatentable over Nakamori in view of Frank and further in view of DeHoff et al. (US 6,408,935). As claims 1 and 15 have overcome the application of the cited art against those, the

dependent claims of claims 12 and 27 patently define over the additional cited art for at least the same reasons.

As a separate and independent basis for the patentability of claims 1 and 15 (and dependent claims 2-14 and 16-29), Applicants respectfully traverse the rejections as failing to identify a proper basis for combining the Nakamori and Frank references. In combining these references, the Office Action stated only that the combination would have been obvious "to provide enhanced cooling to the circuit boards." (Office Action, last line of page 3). This alleged motivation is clearly improper in view of well-established Federal Circuit precedent.

It is well-settled law that in order to properly support an obviousness rejection under 35 U.S.C. § 103, there must have been some teaching in the prior art to suggest to one skilled in the art that the claimed invention would have been obvious. W. L. Gore & Associates, Inc. v. Garlock Thomas, Inc., 721 F.2d 1540, 1551 (Fed. Cir. 1983). More significantly,

"The consistent criteria for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this [invention] should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. ..." Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure... In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered; for the person of ordinary skill in the art is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention."

(*Emphasis added.*) In re Dow Chemical Company, 837 F.2d 469, 473 (Fed. Cir. 1988).

In this regard, Applicants notes that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the prior art to suggest both the combination of elements and the structure resulting from the combination. Stiftung v. Renishaw PLC, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order

to sustain an obviousness rejection based upon a combination of any two or more prior art references, the prior art must properly suggest the desirability of combining the particular elements to derive a function module with a built-in plate-type heat dissipation device, as claimed by the Applicants.

When an obviousness determination is based on multiple prior art references, there must be a showing of some “teaching, suggestion, or reason” to combine the references. Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed. Cir. 1997) (also noting that the “absence of such a suggestion to combine is dispositive in an obviousness determination”).

Evidence of a suggestion, teaching, or motivation to combine prior art references may flow, inter alia, from the references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. See In re Dembiczak, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form, must nevertheless be “clear and particular.” Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617.

If there was no motivation or suggestion to combine selective teachings from multiple prior art references, one of ordinary skill in the art would not have viewed the present invention as obvious. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); Gambro Lundia AB, 110 F.3d at 1579, 42 USPQ2d at 1383 (“The absence of such a suggestion to combine is dispositive in an obviousness determination.”).

Significantly, where there is no apparent disadvantage present in a particular prior art reference, then generally there can be no motivation to combine the teaching of another reference

with the particular prior art reference. Winner Int'l Royalty Corp. v. Wang, No 98-1553 (Fed. Cir. January 27, 2000).

In the present situation, the Office Action has stated that the combination would be obvious "provide enhanced cooling to the circuit boards." To provide an appropriate motivation to combine, however, the Office Action must cite where (in the prior art itself) the suggestion exists that the particular combination of features would realize more efficient cooling and maximum computing power. The Office Action cited column 3, lines 40-48 of Frank as purportedly providing the requisite motivation. However, there is no identification in this teaching of Frank as to why its structure would be desirably combined with a structure like that of Nakamori. Without being able to provide such an identification, the combination reflects clear and improper hindsight reasoning.

For at least the foregoing reasons, the rejections of all remaining claims should be withdrawn.

If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

No fee is believed to be due in connection with this amendment and response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

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Annotated Drawing Sheet

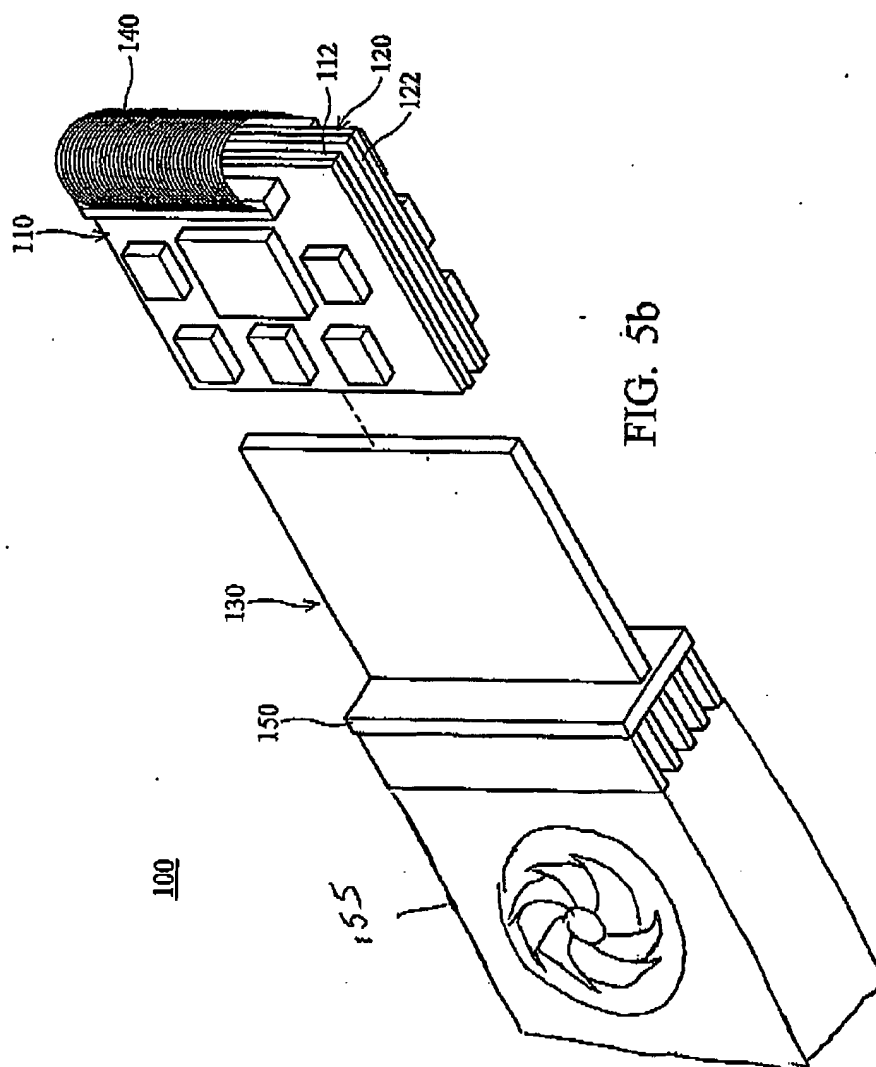


FIG. 5b

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